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Validation of a new whole-body cryotherapy chamber based on forced convection

Romain BOUZIGON^{a,d}, Ahlem ARFAOUI^b, Gilles RAVIER^a, Benoit JARLOT^b, Frédéric GRAPPE^a, Benoit DUGUE^c

^aUniversité de Franche Comté, EA 4660, Laboratoire « Culture Sport Santé Société (C3S) », Unité de Promotion, de Formation et de Recherche (UPFR) des Sports, 31 rue de l'Épitaphe, 25000 Besançon, France.

^bUniversité de Reims Champagne-Ardenne, EA 4694, laboratoire « Groupe de Recherches en Sciences Pour l'Ingénieur (GRESPI)/Biomécanique », Unité de Formation et de Recherche (UFR) STAPS, Campus du Moulin de la Housse, BP 1039, 51687 Reims, France.

^cUniversité de Poitiers, EA 6314, laboratoire « Mobilité, Vieillesse et Exercice (MOVE) », Faculté des sciences du sport, 86000 Poitiers, France.

^dSociété Cryantal Développement, 15 cours du Lizard, 77186 Noisiel, France.

Co-authors

romain.bouzigon@gmail.com

Ahlem ARFAOUI: ahlem.arfaoui@univ-reims.fr

Gilles RAVIER: gilles.ravier@univ-fcomte.fr

Benoit JARLOT: benoit.jarlot@univ-reims.fr

Benoit DUGUE: benoit.dugue@univ-poitiers.fr

Frederic GRAPPE: frederic.grappe@univ-fcomte.fr

*Corresponding author. Romain BOUZIGON, 16 rue des Geais, 39270 Plaisia, France. (+33)6 70 27 93

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Abstract

Whole-body cryotherapy (WBC) and partial-body cryotherapy (PBC) are two methods of cold exposure (from -110°C to -195°C according to the manufacturers). However, temperature measurement in the cold chamber during a PBC exposure revealed temperatures ranging from -25°C to -50°C next to the skin of the subjects (using isolating layer placed between the sensor and the skin). This discrepancy is due to the human body heat transfer. Moreover, on the surface of the body, an air layer called the boundary layer is created during the exposure and limits heat transfer from the body to the cabin air. Incorporating forced convection in a chamber with a participant inside could reduce this boundary layer. The aim of this study was to explore the use of a new WBC technology based on forced convection (frontal

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